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Air

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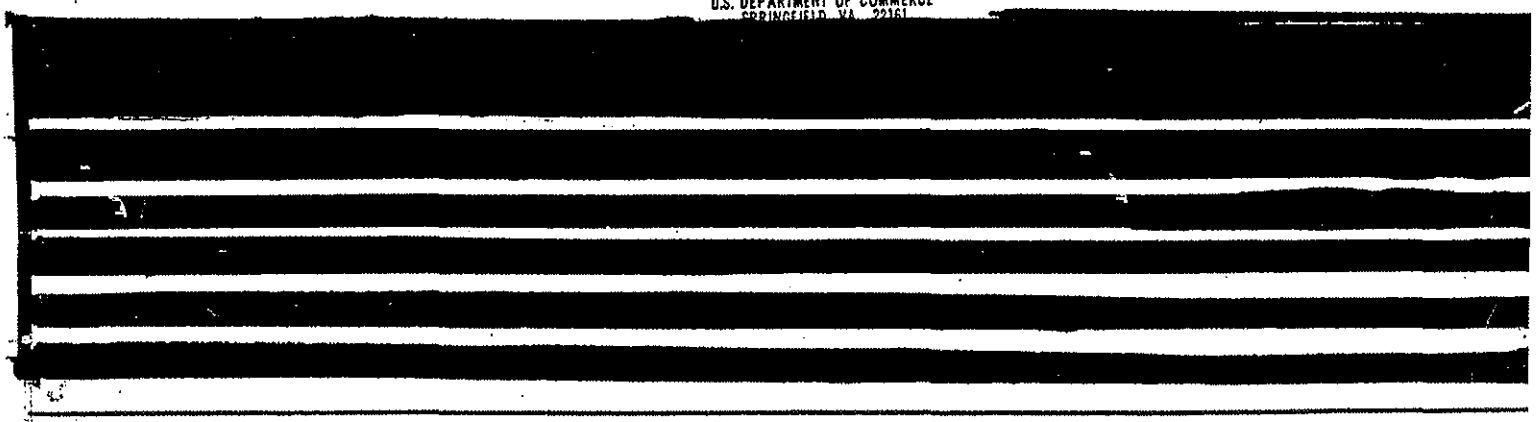
CONTROL OF OPEN FUGITIVE DUST SOURCES



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16. ABSTRACT

The purpose of this document is to provide State and local regulatory personnel with sufficient information to develop control plans for open dust sources of PM_{10}. The following sources are discussed in this document: paved roads, unpaved roads, storage piles, construction/demolition activities, open area wind erosion, and agricultural tilling.

Each chapter begins with an overview of the source category describing emission characteristics and mechanisms. Following this, available emission factors are presented to provide a basis for analyzing the operative nature of control measures. Next, demonstrated control techniques are discussed in terms of estimating efficiency and determining costs of implementation. Suggested regulatory formats explain the "philosophy" used in implementing the preceding technical discussions in viable regulations and compliance actions. Example regulations for each source category are presented in an appendix. In additon, a series of other appendices are also included which discuss terminology used in this manual, a general costing procedure used for open dust source controls and general record keeping/inspection procedures.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
PM_{10}	Agriculture		
Fugitive dust	Emission estimates		
Roads	Control techniques		
Storage Piles	Costs		
Construction/ Demolition	Regulatory Language		
Open Areas			

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FINAL REPORT

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The recommended emission factor equation presented above assumes that all of the erosion potential corresponding to the fastest mile of wind is lost during the period between disturbances. Because the fastest mile event typically lasts only about 2 min, which corresponds roughly to the half-life for the decay of actual erosion potential, it could be argued that the emission factor overestimates particulate emissions. However, there are other aspects of the wind erosion process which offset this apparent conservatism:

1. The fastest mile event contains peak winds which substantially exceed the mean value for the event.

2. Whenever the fastest mile event occurs, there are usually a number of periods of slightly lower mean wind speed which contain peak gusts of the same order as the fastest mile wind speed.

Of greater concern is the likelihood of overprediction of wind erosion emissions in the case of surfaces disturbed infrequently in comparison to the rate of crust formation.

4.1.3 Wind Emissions From Continuously Active Piles

For emissions from wind erosion of active storage piles, the following total suspended particulate (TSP) emission factor equation is recommended:

$$E = 1.9 \left(\frac{s}{1.5}\right) \left(\frac{365-p}{235}\right) \left(\frac{f}{15}\right) \text{ (kg/d/hectare)}$$

$$E = 1.7 \left(\frac{s}{1.5}\right) \left(\frac{365-p}{235}\right) \left(\frac{f}{15}\right) \text{ (lb/d/acre)} \qquad (4\text{-}9)$$

where: E = total suspended particulate emission factor

s = silt content of aggregate, percent

p = number of days with $\geq$0.25 mm (0.01 in.) of precipitation per year

f = percentage of time that the unobstructed wind speed exceeds 5.4 m/s (12 mph) at the mean pile height

The fraction of TSP which is PM_{10} is estimated at 0.5 and is consistent with the PM_{10}/TSP ratios for materials handling (Section 4.1.1) and wind erosion (Section 4.1.2). The coefficient in Equation (4-9) is taken from Reference 1, based on sampling of emissions from a sand and